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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,229	10/08/2003	Suguru Tabara	12844.0045US01	8128
23552	7590	04/15/2005		
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903				
EXAMINER GOUDREAU, GEORGE A				
ART UNIT		PAPER NUMBER		
1763				

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/682,229

Applicant(s)

TABARA, SUGURU

Examiner

George A. Goudreau

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12 is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 6-8, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Shintani et. al. (6,651,678).

Shintani et. al. disclose a three step rie etching process for anisotropically etching a polysi gate on top of a pad SiO₂ layer on the surface of a Si wafer which is sequentially conducted in an ECR type plasma etcher. The etching process is comprised of the following steps:

-First, the majority of the polysi gate is anistropically rie etched using a patterned photo resist etch mask, and a plasma which is comprised of HBr-Cl₂-O₂ with 5 vol. % O₂ content.;

-Second, the polysi gate is anisotropically over etched in a plasma which is comprised of HBr-O₂ with 6 vol. % O₂.; and

-Third, the polysi gate is anisotropically over etched in a plasma, which is comprised of HBr-O₂ with 17 vol. % O₂.

This is discussed specifically in columns 4-6; and discussed in general in columns 1-10. This is shown in figures 1-15.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 2 above.

The reference as applied in paragraph 2 above fail to disclose the following aspects of applicant's claimed invention:

- the specific etch process conditions which are claimed by the applicant; and
- the specific thicknesses, which are claimed by the applicant for the gate oxide layer

It would have been obvious to one skilled in the art to form the gate oxide layer in the process taught above to the specific thicknesses, which are claimed by the applicant based upon the following. It would have been desirable to form the gate oxide layer to a

sufficient thickness to provide adequate insulation between the gate electrode, and the Si wafer without forming the gate oxide layer to an excessive thickness, which would undesirably waste both precious process materials, and processing time.

It would have been prima facie obvious to employ any of a variety of different etch process conditions in the etching process taught above including those which are specifically claimed by the applicant. These are all well-known variables in the plasma etching art, which are known to affect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process conditions which are claimed by the applicant in the etching process taught above based upon *In re Aller* as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the process parameters, which are claimed by the applicant, are results effective variables whose values are known to effect both the rate, and the quality of the plasma etching process.

6. Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication should be directed to examiner George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
Art Unit 1763